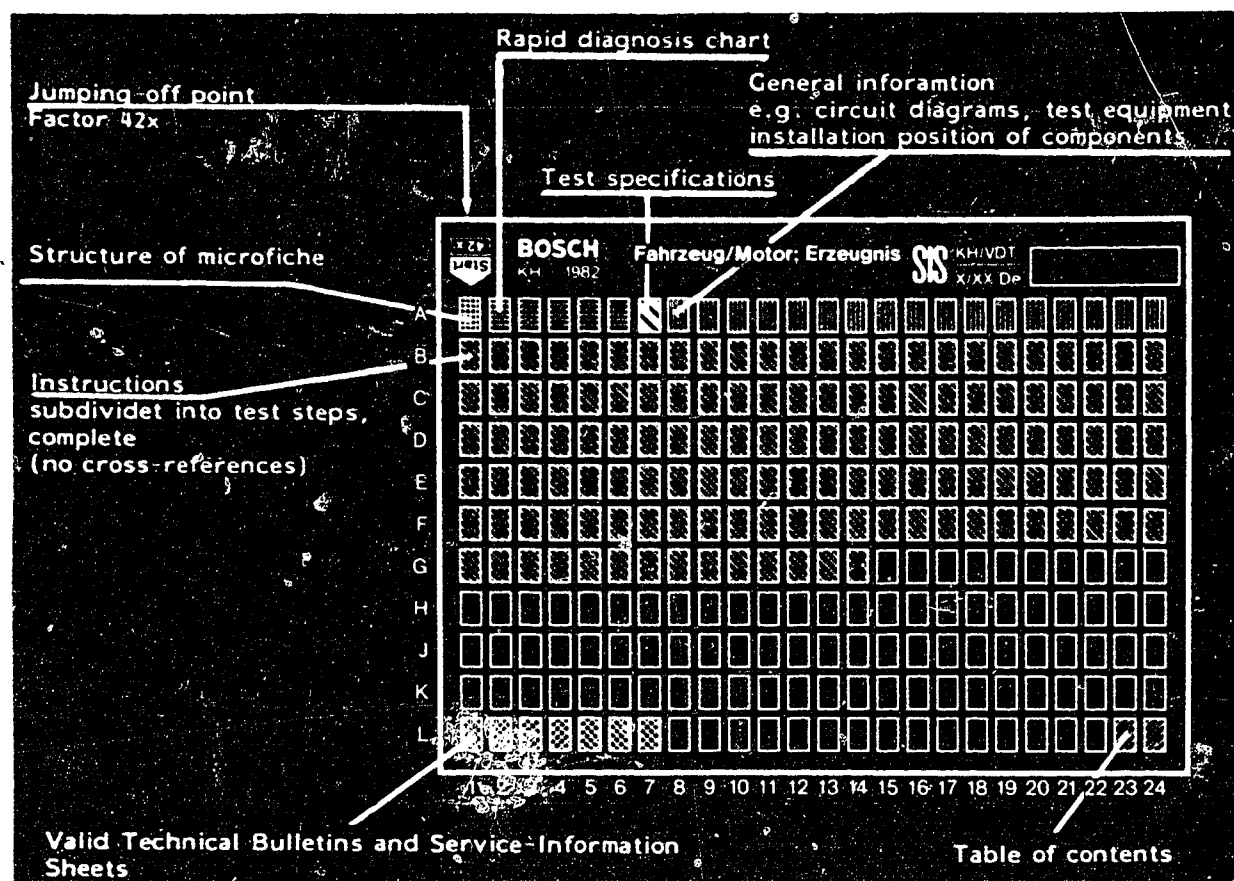


Structure of microfiche



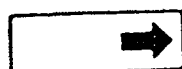
1. Read from left to right

2. Title of microfiche (appears on each coordinate)

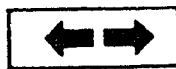
| | | |
|-------------|----------------------------|--|
| E 16 | Product/assembly/test step | |
| | Vehicle/engine | |

Coordinate

3. Limits of section



Beginning



Mid-section



End



One-page
section

4. References to relevant test steps in
test specifications; coordinate e.g. C6

C 6

A1

Trouble-shooting program



1. Rapid diagnosis chart

The following rapid diagnosis chart makes it possible for the experienced expert to quickly check the electrical/electronic part of the ignition system using normal workshop test equipment.

The rapid diagnosis chart contains the following information:

- Customer complaint
- Cause of the trouble
- Test instructions (if no coordinate given on the right, further possibilities for testing are indicated).
- Coordinates for detailed trouble-shooting.

If detailed information and instructions on trouble-shooting are necessary, always proceed according to the trouble-shooting program starting on coordinate B 1.



Rapid diagnosis chart

Customer complaint (symptom of trouble)

1. Starting motor operates, but engine fails to start

2. Rough idling

3. Poor throttle response

4. Engine lacks power

5. Misfiring

6. Fuel consumption too high

7. Engine pings when accelerating

8. Backfiring

9. Engine becomes too hot

| | | | | | | | | | <u>Cause of trouble</u> | <u>Test instructions</u> | <u>Coordinates</u> |
|---|---|---|---|---|---|---|---|---|--------------------------------|---|--------------------|
| ● | ● | ● | ● | ● | ● | | ● | | Spark plugs defective | Assess using ignition oscillograms or remove spark plug and make visual examination. | --- |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | Ignition timing incorrect | See Autodata test specifications | --- |
| ● | ● | ● | ● | ● | | | | | Shunt on secondary side | Assess ignition coil, ignition distributor, ignition harness and spark plug using ignition oscillogram or make visual examination | --- |
| ● | ● | ● | ● | ● | | | | | Open circuit on secondary side | Assess ignition coil, ignition distributor, ignition harness and spark plug using ignition oscillogram, or test for continuity using ohmmeter | --- |
| ● | | | | | | | | | Open circuit on primary side | Test voltage supply to trigger box, primary circuit, ballast resistors and ignition coil. | C 1, C 3 |
| ● | ● | ● | ● | ● | | | | | Ignition coil defective | Test ignition coil | C 3 |

A3

Rapid diagnosis chart
TCI-H, conversion kit



A4

Rapid diagnosis chart
TCI-H, conversion kit



Rapid diagnosis chart

Customer complaint (symptom of trouble)

1. Starting motor operates, but engine fails to start

2. Rough idling

3. Poor throttle response

4. Engine lacks power

5. Misfiring

6. Fuel consumption too high

7. Engine pings when accelerating

8. Backfiring

9. Engine becomes too hot

| | | | | | | | | | | <u>Cause of trouble</u> | <u>Test instructions</u> | <u>Coordinates</u> |
|---|---|---|---|---|---|---|---|---|--|--|---|--------------------|
| | | ● | ● | ● | ● | | | | | Interference-suppression resistors defective | Assess using ignition oscillogram or perform resistance measurement | --- |
| | ● | ● | ● | | ● | ● | ● | ● | | Centrifugal advance defective | See Autodata test specifications | --- |
| | | ● | ● | | ● | ● | | ● | | Vacuum advance defective | See Autodata test specifications | --- |
| ● | | | | | | | | | | Trigger box defective | Test trigger box output stage, test primary voltage | B 11 |
| ● | | | | | | | | | | Ignition distributor pickup system defective | Test voltage supply and operation of magnetic pickup assembly. | C 5 C 7 |
| ● | ● | ● | ● | ● | | | | | | Engine-speed limiter defective | Test cut-out speed, or perform visual examination | |
| ● | | | | | | | | | | Firing sequence incorrect | See Autodata test specifications | |

A5

Rapid diagnosis chart
TCI-H, conversion kit



A6

Rapid diagnosis chart
TCI-H, conversion kit



2. Test specifications

| | | |
|-------------------------------|-----------------------|-----------|
| Ignition coil primary | 1.0...1.7 Ω | B5 |
| Ignition coil secondary | 5.5...10.0 k Ω | |
| Ballast resistor 0.6 Ω | 0.5...0.7 Ω | |
| Ballast resistor 0.6 Ω | 0.5...0.7 Ω | |
| or | | |
| Ballast resistor 0.4 Ω | 0.3...0.5 Ω | |
| Ballast resistor 0.6 Ω | 0.5...0.7 Ω | |

| | | |
|------------------|------------------------------|-----------|
| Voltage drop | | B7 |
| Ignition coil | ≥ 4.0 V or ≥ 4.4 V | |
| Voltage supply | 1.0 V | |
| Trigger box max. | below U_B | |

| | | |
|------------------------------------|-------------|------------|
| Trigger box output stage | max. 2.0 V | B11 |
| Primary voltage with engine idling | 290...370 V | |

| | | |
|-------------------------------|-------------|-----------|
| Voltage supply | 0.5...2.0 V | C5 |
| Magnetic pickup assembly max. | below U_B | |

Magnetic pickup assembly operation

C7

Vane outside air gap
(trigger wheel removed) ≤ 0.4 V

Vane in air gap ≥ 1.0 V

C9

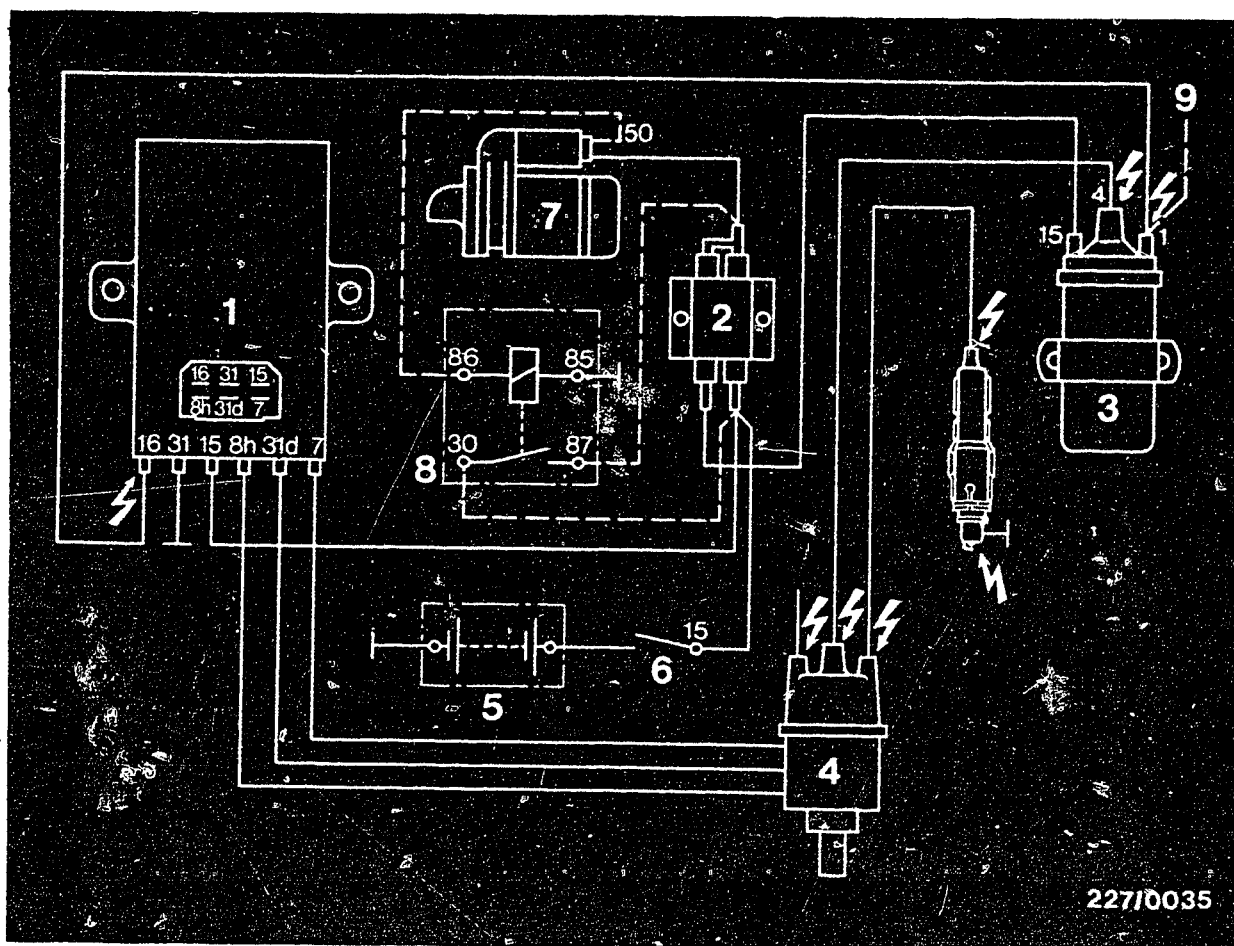
See Autodata test specifications for settings for ignition, idle speed, exhaust gas, valve clearance etc.

A7

Test specifications

TCI-H, conversion kit



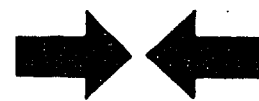


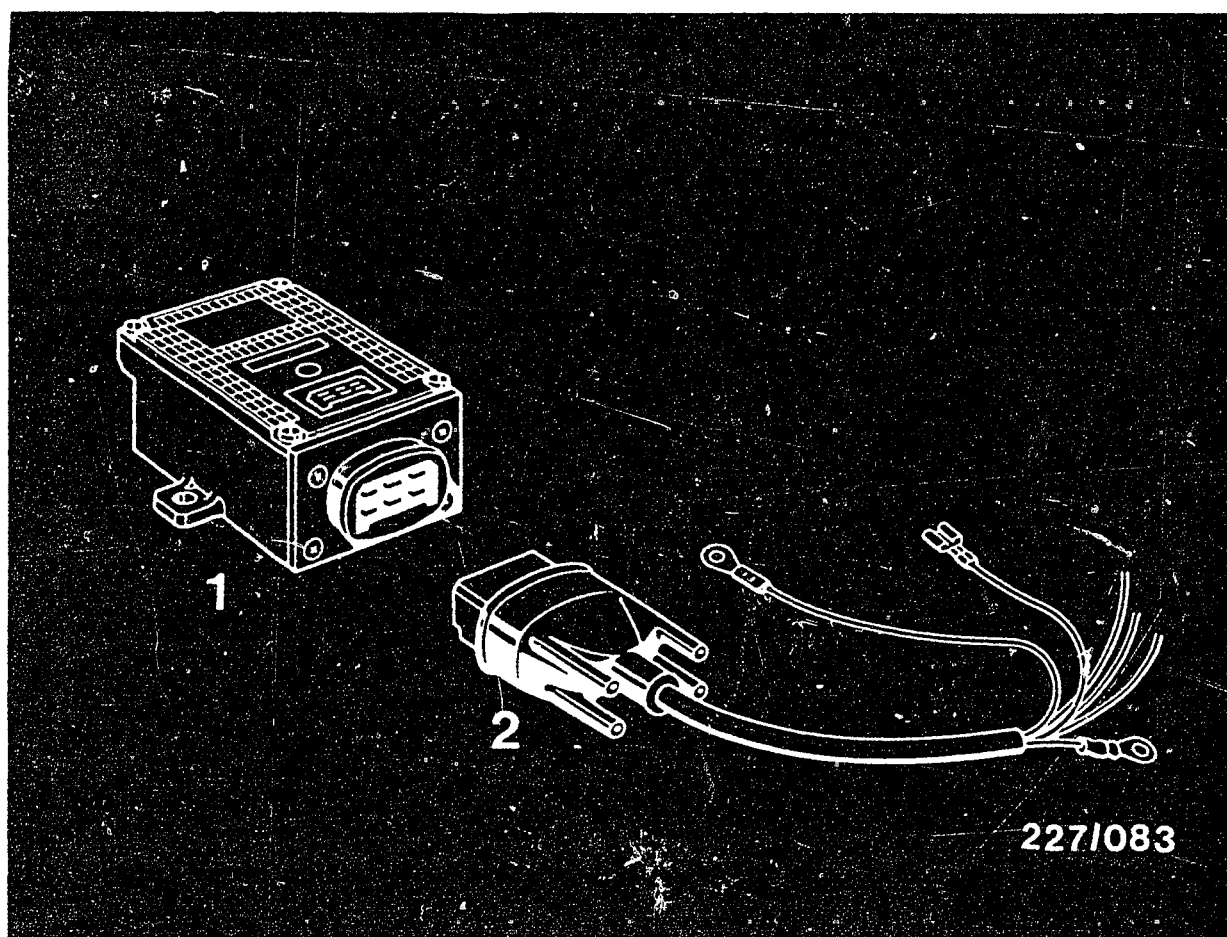
227/0035

⚡ Dangerous voltages
approx. 400 V - 25 kV

- 1 = Trigger box
- 2 = Ballast resistor
- 3 = Ignition coil
- 4 = Ignition distributor
- 5 = Battery
- 6 = Ignition and starting switch
- 7 = Starting motor
- 8 = Relay - is only connected if starting motor does not have term. 15a.
- 9 = To tachometer

3. Electrical terminal diagram





- 1 = TCI-H trigger box
2 = Trigger-box plug

4. Installation position of components

The trigger box is located in the engine compartment



5. Necessary test equipment, aids

| | | |
|---------------------------------------|-------------|------------------------|
| Motortester e.g. | MOT 002.00 | 0 684 000 200 |
| Spark gap e.g. | | |
| Ignition-coil and condenser tester or | EFAW 106 A | 0 681 100 001 |
| Single spark gap | EF 1177/7 | 1 684 531 000 |
| 5 kΩ sleeve-type suppressor | | 0 356 500 001 |
| Ohmmeter | ETE 014.00 | 0 684 101 400 |
| or e.g. | Pontavi Wh2 | Commercially available |
| Ammeter | | Commercially available |
| (with mA measuring range) | | |
| Voltmeter ETE 014.00 (Ri 50kΩ/V) | | 0 684 101 400 |
| Voltmeter ETT 004 (Ri 50kΩ/V) | | 0 684 100 400 |
| Voltmeter KTE 001.03 (Ri 50kΩ/V) | | 0 684 400 103 |
| Voltmeter MOT 001.03 (Ri 50kΩ/V) | | 0 684 000 103 |
| Voltmeter MOT 201 (Ri 50kΩ/V) | | 0 684 000 201 |
| Voltmeter MOT 202 (Ri 50kΩ/V) | | 0 684 000 202 |



6. Danger of accident on electronic ignition systems

Increased demands of modern engines on the ignition system combined with the desire for freedom of maintenance have recently led to electronic ignition systems being fitted as standard. Usually the ignition power of electronic systems (of almost all manufacturers) is higher than that of conventional systems, and there are signs of further increases in power. Electronic ignition systems thus reach a power range which can be highly dangerous if live parts or terminals are touched (both on the primary as well as the secondary sides).

In this connection we should like to point out that the VDE regulations, in particular VDE 0104/7.67 and/or the respective national regulations must be followed when testing or working on the ignition system.

The ignition should always be switched off when working on the ignition system (switch off ignition or voltage source). Such work includes:

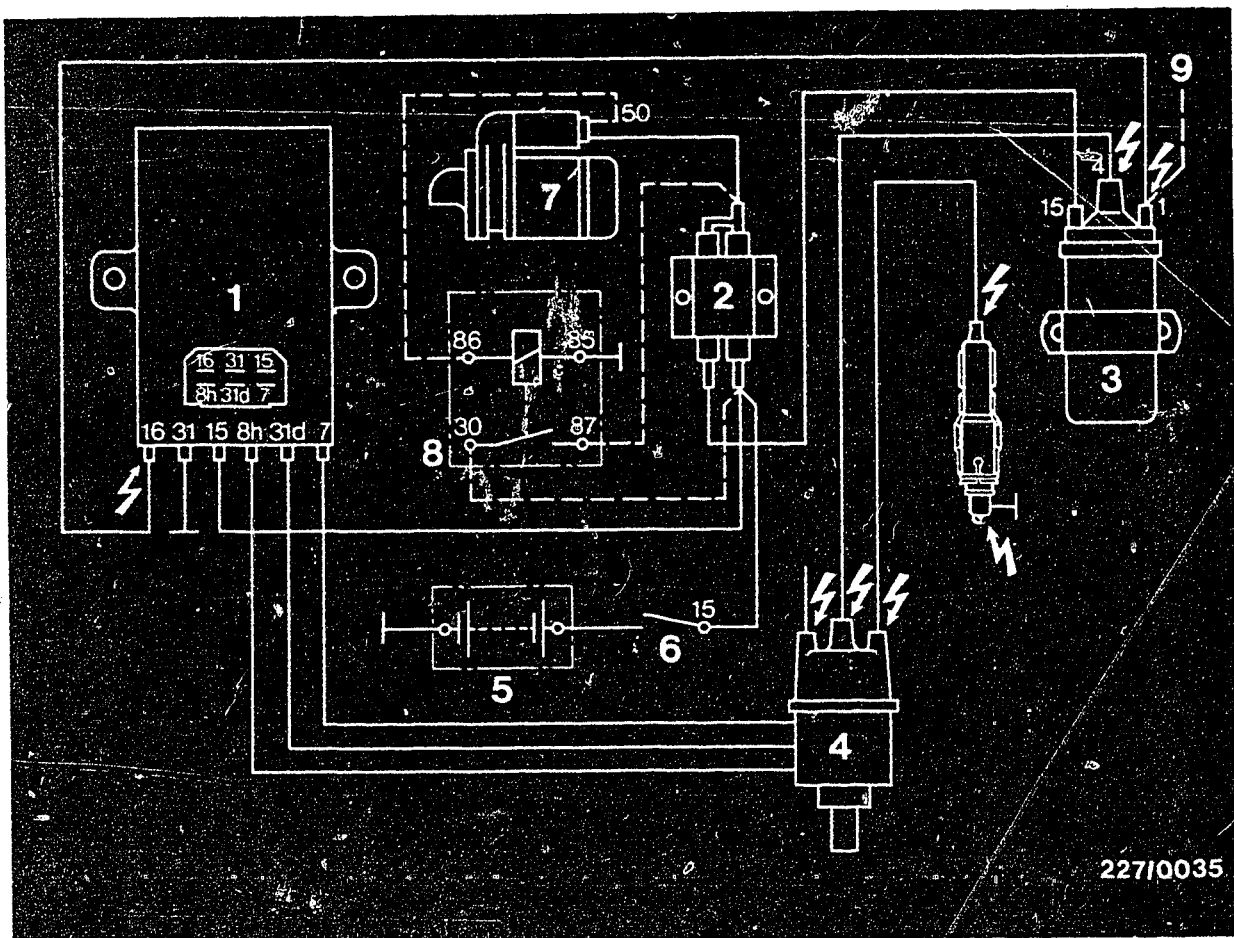
- Connecting of engine test equipment (timing light, dwell-tach tester, ignition oscilloscope, etc.).
- Replacing parts of the ignition system (spark plug, ignition coil, ignition distributor, H.T. ignition cable, etc.).




If, while testing the ignition system or during adjustment work on the engine (e.g. carburettor), it becomes necessary to switch on the ignition (switch on ignition or voltage source), the above-mentioned dangerous voltages occur over the entire system.

The danger of accident exists, therefore, not only on the individual assemblies of the ignition system (e.g. ignition distributor, ignition coil, trigger box, ignition harness), but also on the wiring harness (e.g. tachometer connection, diagnostic plug), at plug-in connections and test equipment.





- | | |
|--------------------------|---|
| 1 = Trigger box | 6 = Ignition and starting switch |
| 2 = Ballast resistor | 7 = Starting motor |
| 3 = Ignition coil | 8 = Relay - is only connected if starting motor does not have term. 15a |
| 4 = Ignition distributor | 9 = To tachometer |
| 5 = Battery | |

 = Dangerous voltages approx. 400 V - 25 kV

Electrical terminal diagram

The dangerous locations are marked with danger arrows taking the example of the terminal diagram of an electronic ignition system.



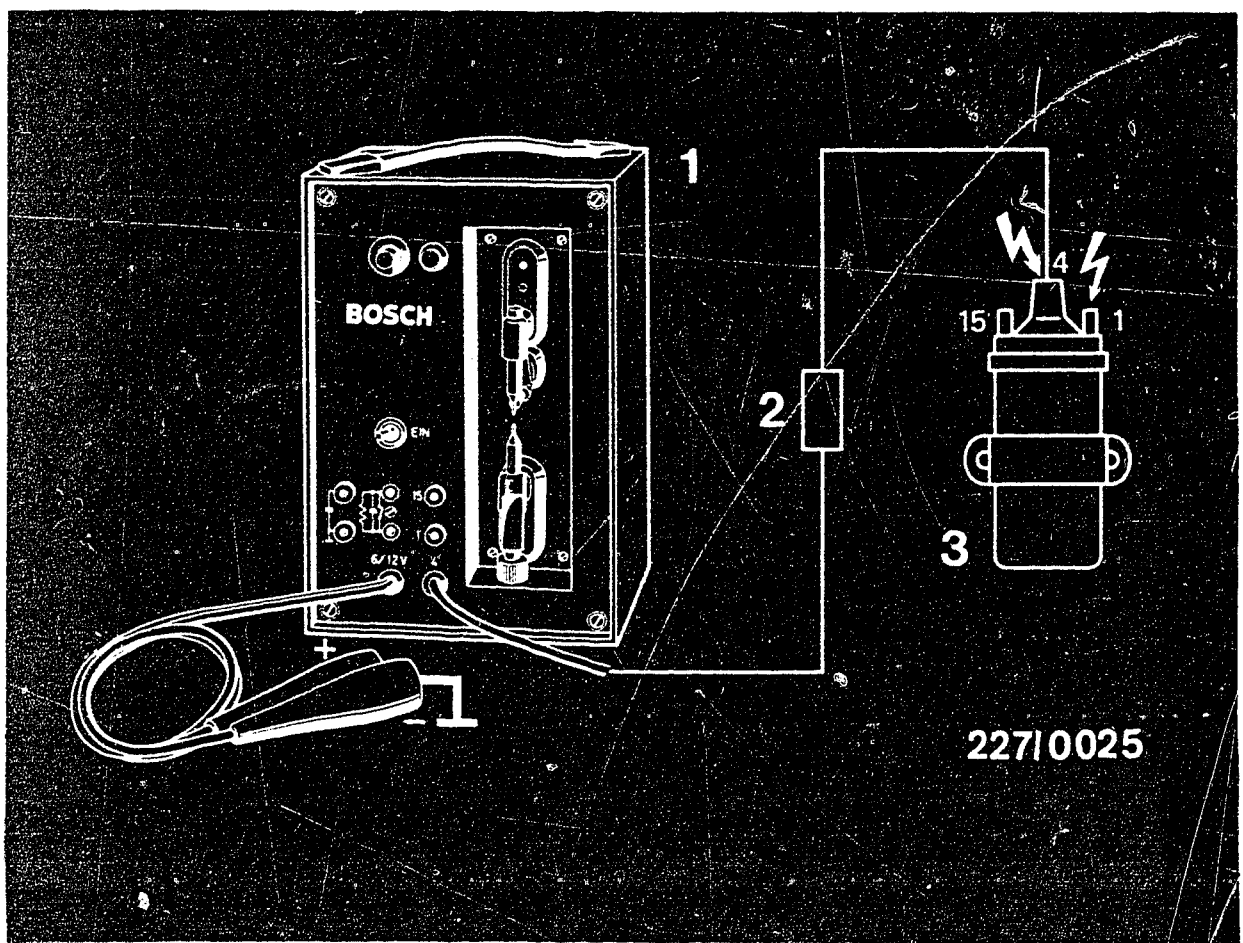
7. Important vehicle information

- During the compression test, either pull off the trigger-box plug or firmly connect terminal 4 of the ignition coil to ground using an extra cable (dangerous voltages, insulation damage at ignition coil, ignition distributor or ignition harness).


Note: The extra cable must be suppressed with at least 2 k Ω , e.g. with the interference-suppression sleeve (5 k Ω) 0 356 500 001.

- Resistance measurements must only be performed with the ignition switched off or with the battery disconnected (measuring instrument defective).
- In order to prevent the trigger box from being irreparably damaged, the secondary side of the ignition system must have at least 2 k Ω interference suppression.





- 1 = Spark gap
- 2 = 5 k Ω sleeve-type suppressor
- 3 = Ignition coil

 = Dangerous voltages (400 V - 25 kV)

- In order to prevent the trigger box from being irreparably damaged, when using a spark gap, an interference-suppression resistor of at least 2 k Ω must be connected between the spark gap and ignition coil terminal 4, e.g. sleeve-type suppressor (5 k Ω) 0 356 500 001.
- In the case of ignition distributors with engine-speed limitation the ignition distributor side terminal 4 must have 1 k Ω interference suppression. Operation without interference suppression will lead to the destruction of the trigger box.

- No external voltage, e.g. ohmmeter, must be connected to the ignition distributor magnetic pickup assembly (Hall generator). Caution when switching over measuring ranges.
- The holding springs of the distributor cap must not drop into the pickup system when the engine is being cranked and with the dust-protection cover removed.
- The lines from the Hall generator to the trigger box must be laid separately from other lines. There must be at least 100 mm distance between Hall generator lines and the ignition cables and the line from terminal 16 of the trigger box to terminal 1 of the ignition coil (Hall generator will be destroyed).
- Do not disconnect the battery while the engine is running.
- Incorrect battery polarity will lead to the destruction of the magnetic pickup assembly of the ignition distributor, and of trigger box and ignition coil.
- Do not use a starting aid with more than 16 V or a fast charger for starting.
- The specified ignition coil (see Part No.) must not be replaced with a different ignition coil.
- No suppression capacitor must be connected to ignition coil terminal 1 and terminal 15.



- No battery + or test lamp must be connected to ignition coil terminal 1 (trigger box will be destroyed).
- Ignition cable from ignition coil terminal 4 to ignition distributor terminal 4 must not be disconnected during operation.



9. Trouble-shooting program

Procedure

The trouble-shooting program is divided into 3 rows of boxes.

The left-hand row contains test instructions and test specifications.

The center row contains repair instructions.

The right-hand row contains the illustrations/terminal diagrams belonging to the text and the explanation of the items in the picture.

If the questions asked in the left-hand row can be answered conclusively with "Yes", then proceed to the next test down.

If the answer to the question is "No", branch to the center row and carry out the tests given there.

Before testing, make sure of the following:

Battery fully charged, fuel system O.K., engine mechanically O.K. (e.g. compression, valve clearance etc.). Ambient temperature/ignition system temperature 0° to +10C° (temperature has a considerable effect on measured values).



Beginning of trouble-shooting program

Starting motor operates, engine fails to
start or misfires or lacks power.

Yes

Continued on B 3/4

B2

Trouble-shooting program

TCI-H, conversion kit



yes

Test primary signal. If no oscilloscope or tachometer available, check whether ignition spark across spark gap.

Primary signal testing with oscilloscope
Connect oscilloscope to ignition coil as per operating instructions.
Start engine.
Oscilloscope must indicate a primary voltage (of any value).

Primary signal testing with tachometer
Connect tachometer to ignition coil as per operating instructions.
Start engine.
Tachometer must indicate a reading (of any value).

Ignition spark testing with spark gap
Remove H.T. ignition cable term. 4 from ignition coil.
Connect spark gap including sleeve-type suppressor (5 k Ω) to ignition coil. Adjust spark gap to 5 mm.
Start engine.
There must be sparks across the spark gap.

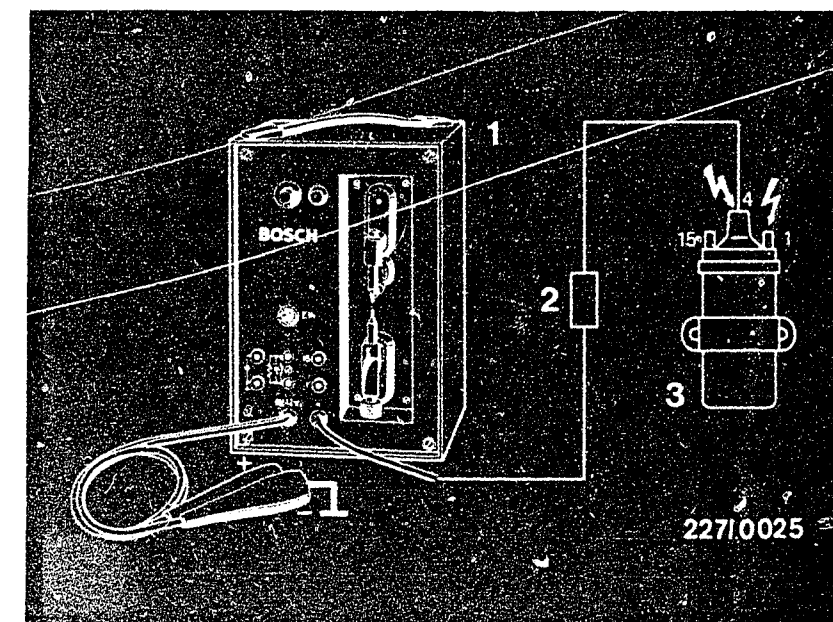
Primary signal present or ignition sparks across spark gap?

yes

Continued on B 5/6

no

If no primary signal or no ignition spark, continue testing at C 1.
Tests from B 5 onwards not necessary.



- 1 = Spark gap
- 2 = 5 k Ω sleeve-type suppressor
- 3 = Ignition coil

⚡ Dangerous voltages
approx. 400 V - 25 kV

B3

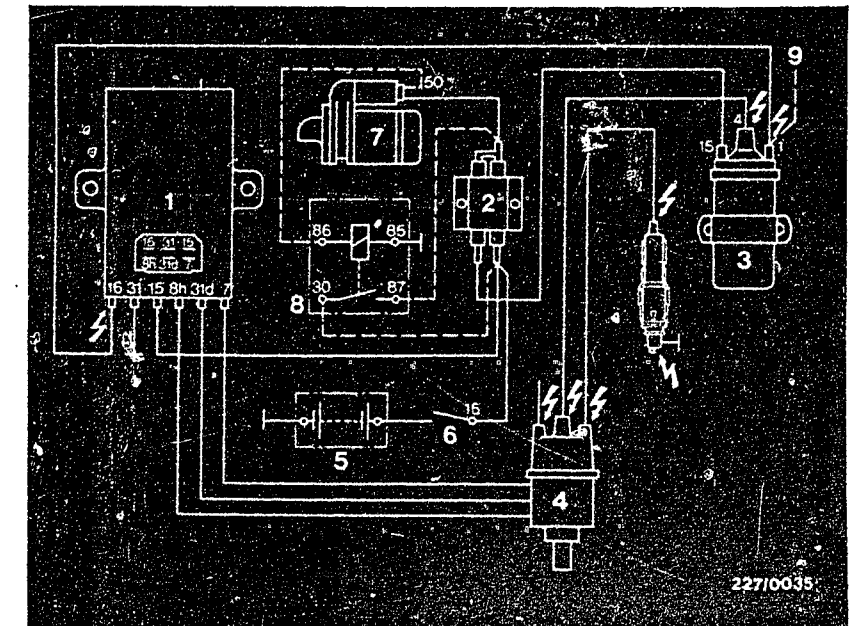
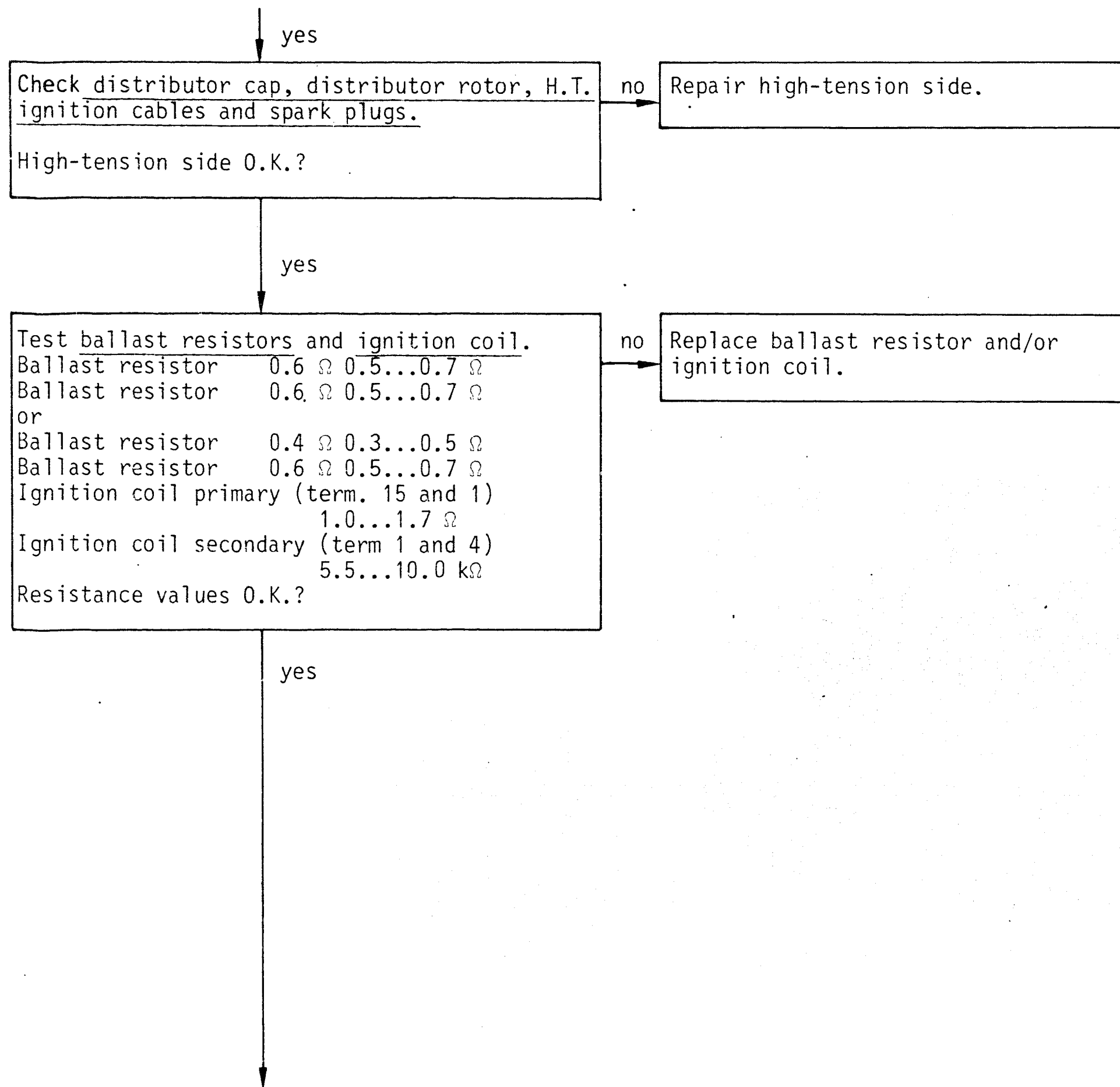
Trouble-shooting program
TCI-H, conversion kit



B4

Trouble-shooting program
TCI-H, conversion kit





⚡ Dangerous voltages
approx. 400 V - 25 kW

- 1 = Trigger box
- 2 = Ballast resistor
- 3 = Ignition coil
- 4 = Ignition distributor
- 5 = Battery
- 6 = Ignition and starting switch
- 7 = Starting motor
- 8 = Relay - is only connected if starting motor does not have term. 15a
- 9 = To tachometer

Continued on B 7/8

B5

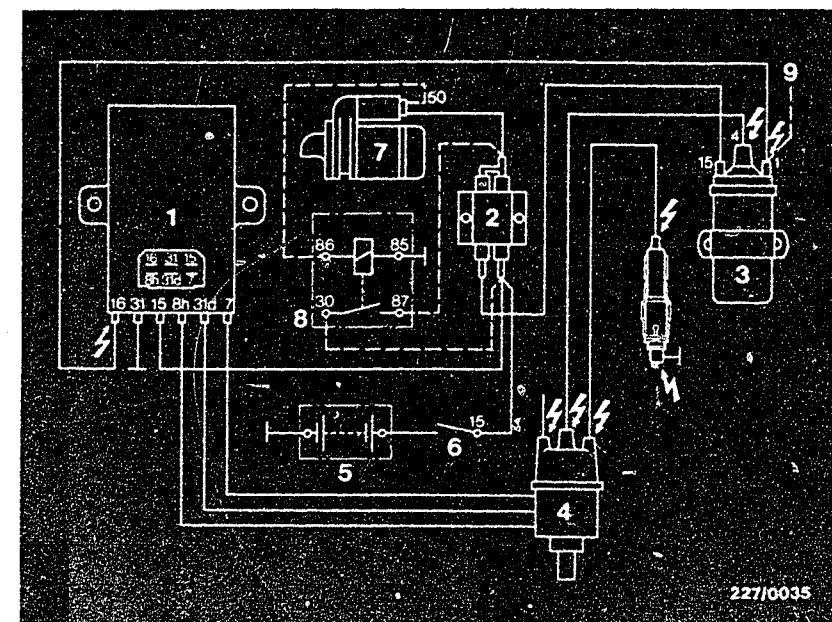
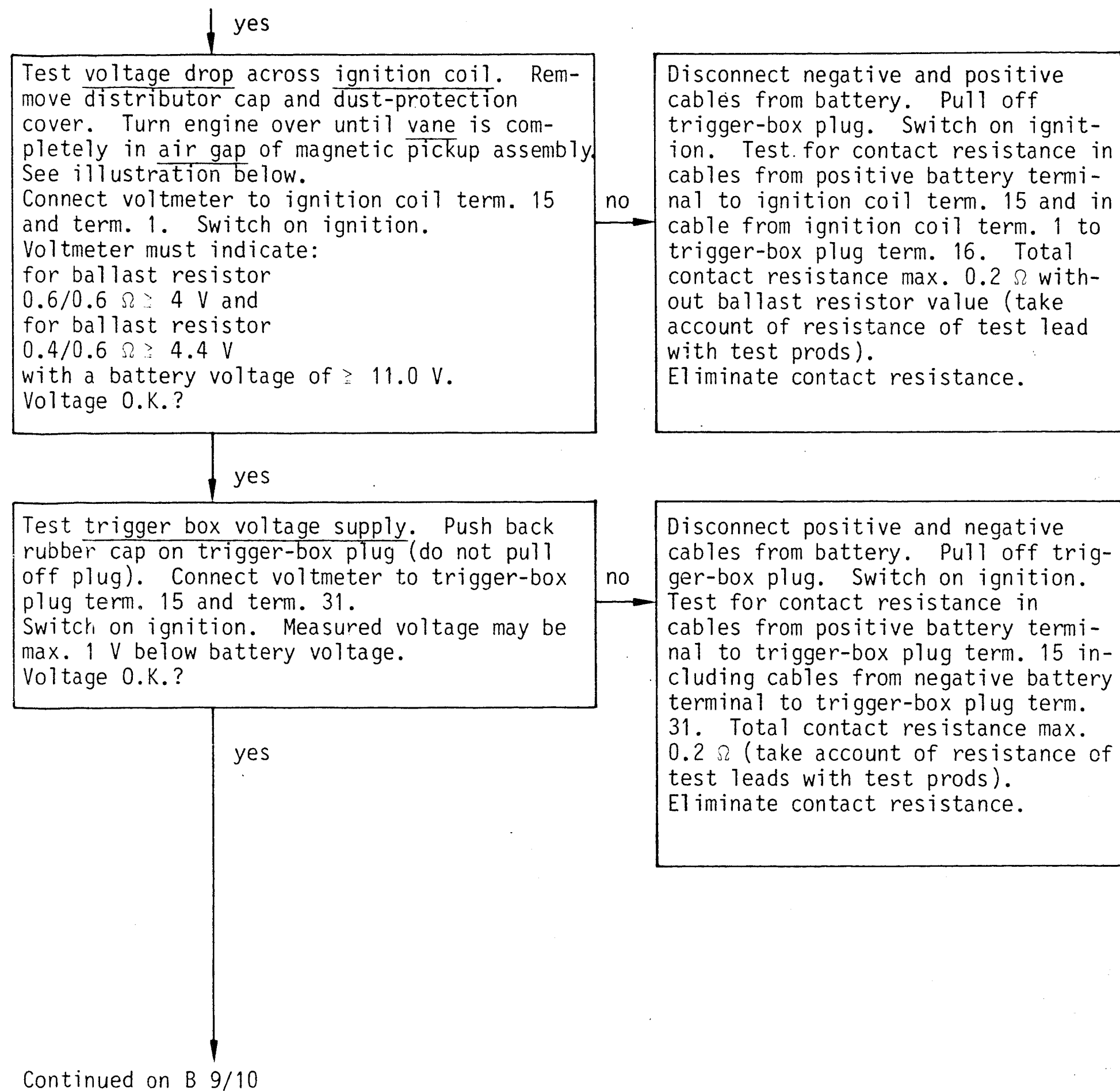
Trouble-shooting program
TCI-H, conversion kit



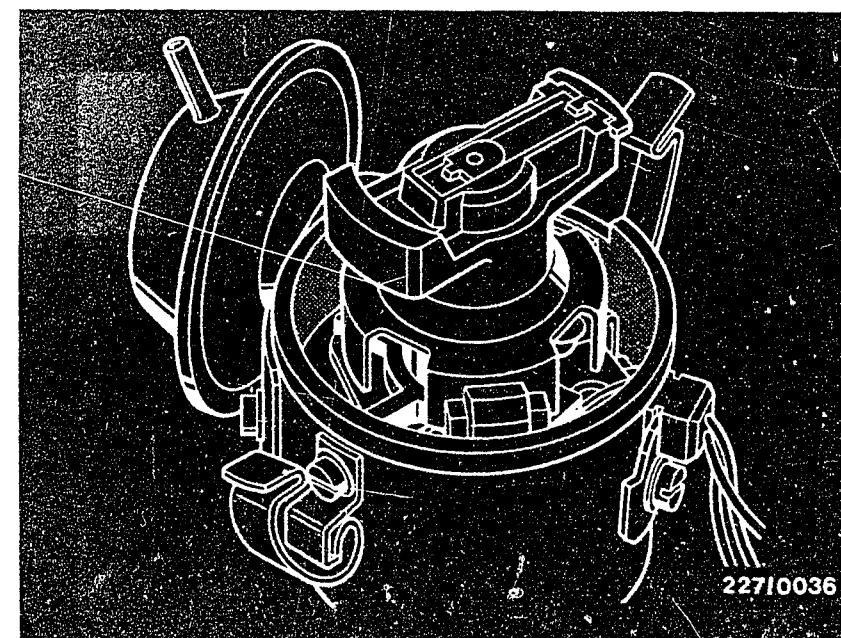
B6

Trouble-shooting program
TCI-H, conversion kit





- ⚡ Dangerous voltages
 approx. 400 V - 25 kW
- 1 = Trigger box
 - 2 = Ballast resistor
 - 3 = Ignition coil
 - 4 = Ignition distributor
 - 5 = Battery
 - 6 = Ignition and starting switch
 - 7 = Starting motor
 - 8 = Relay
 - 9 = To tachometer



B7

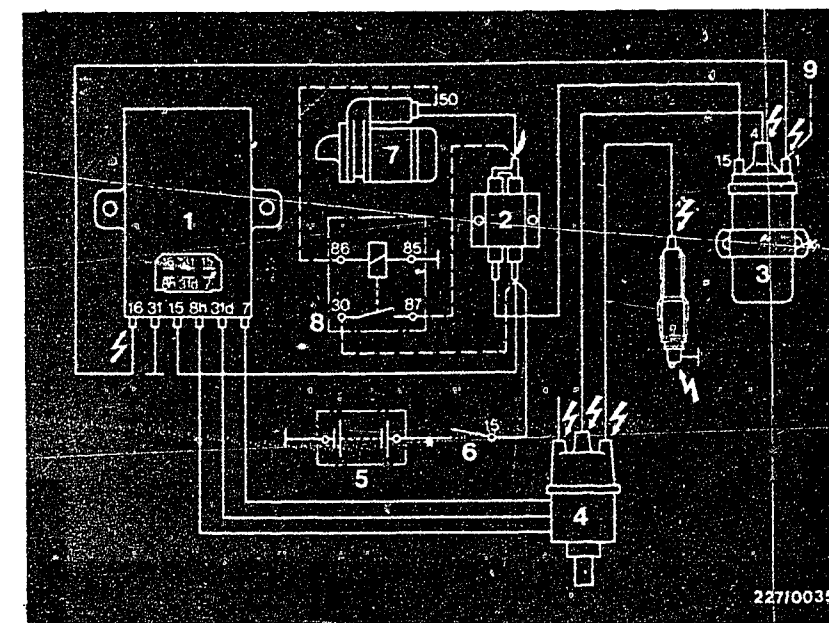
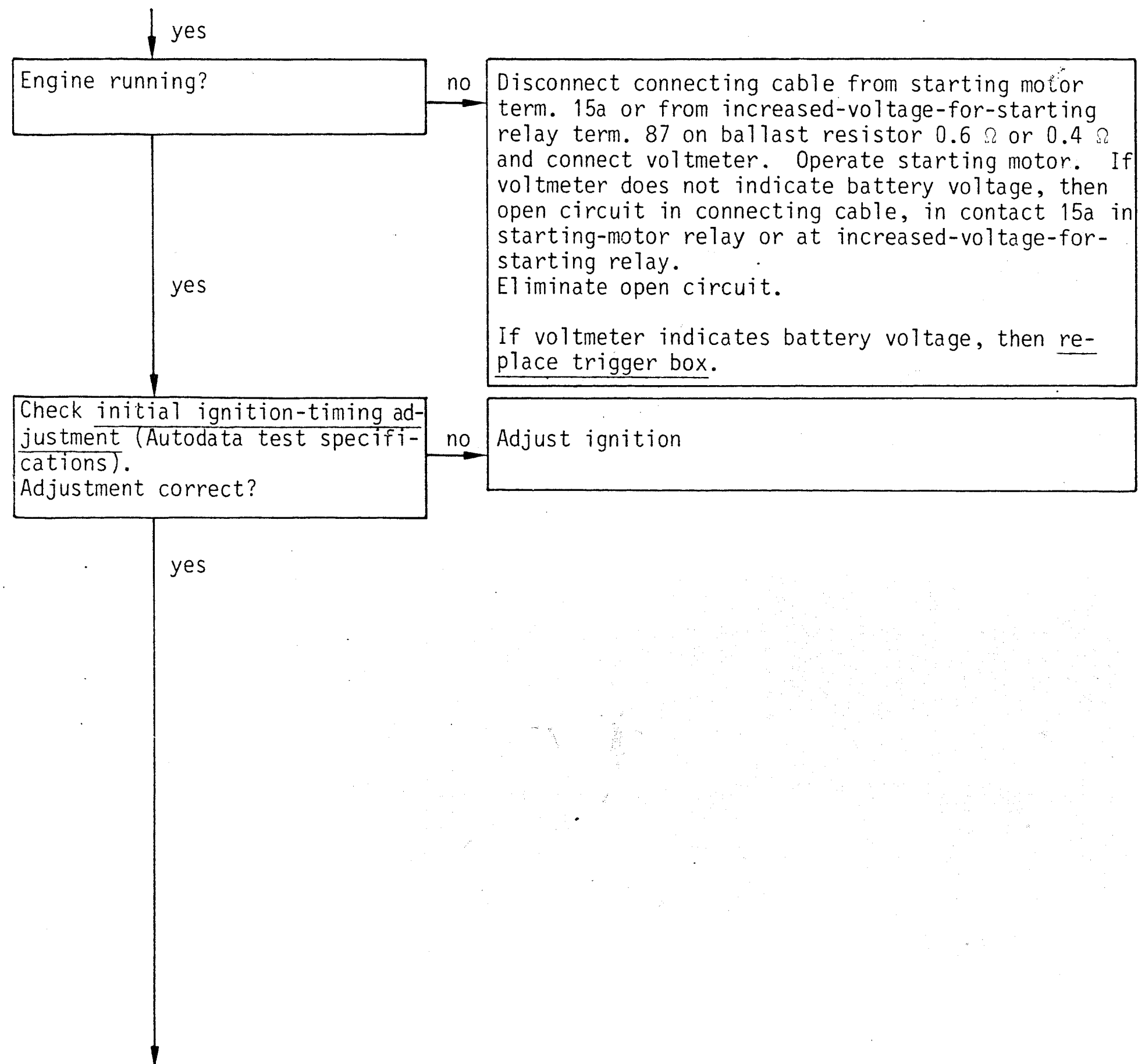
Trouble-shooting program
 TCI-H, conversion kit



B8

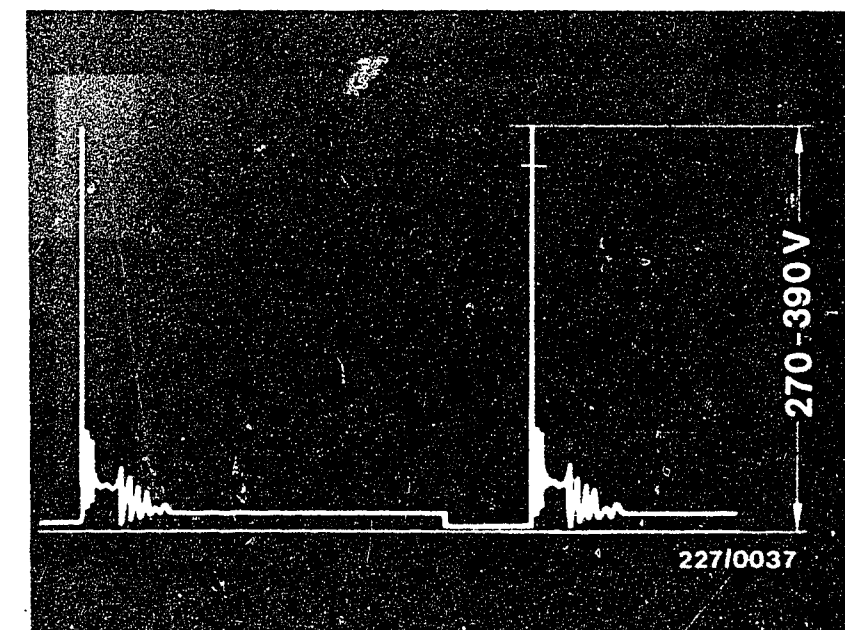
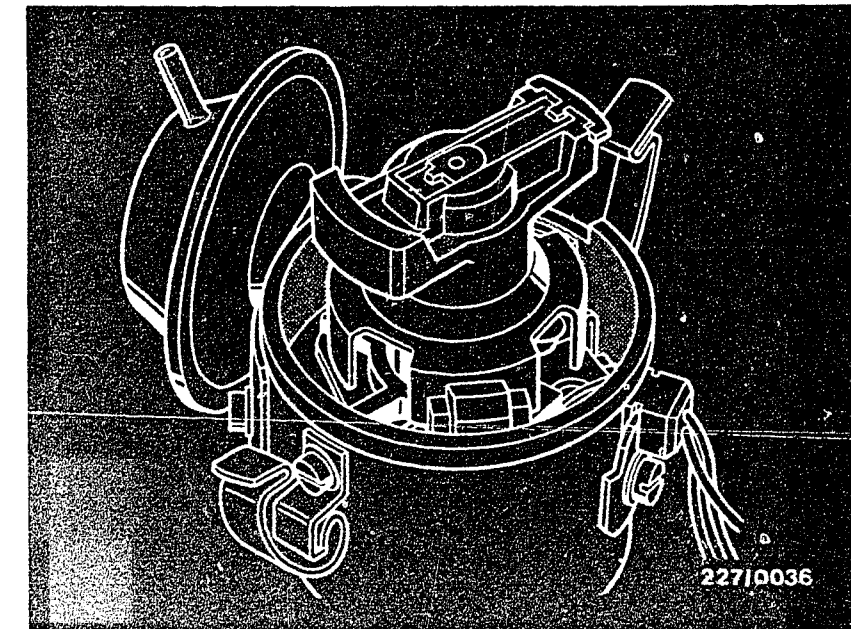
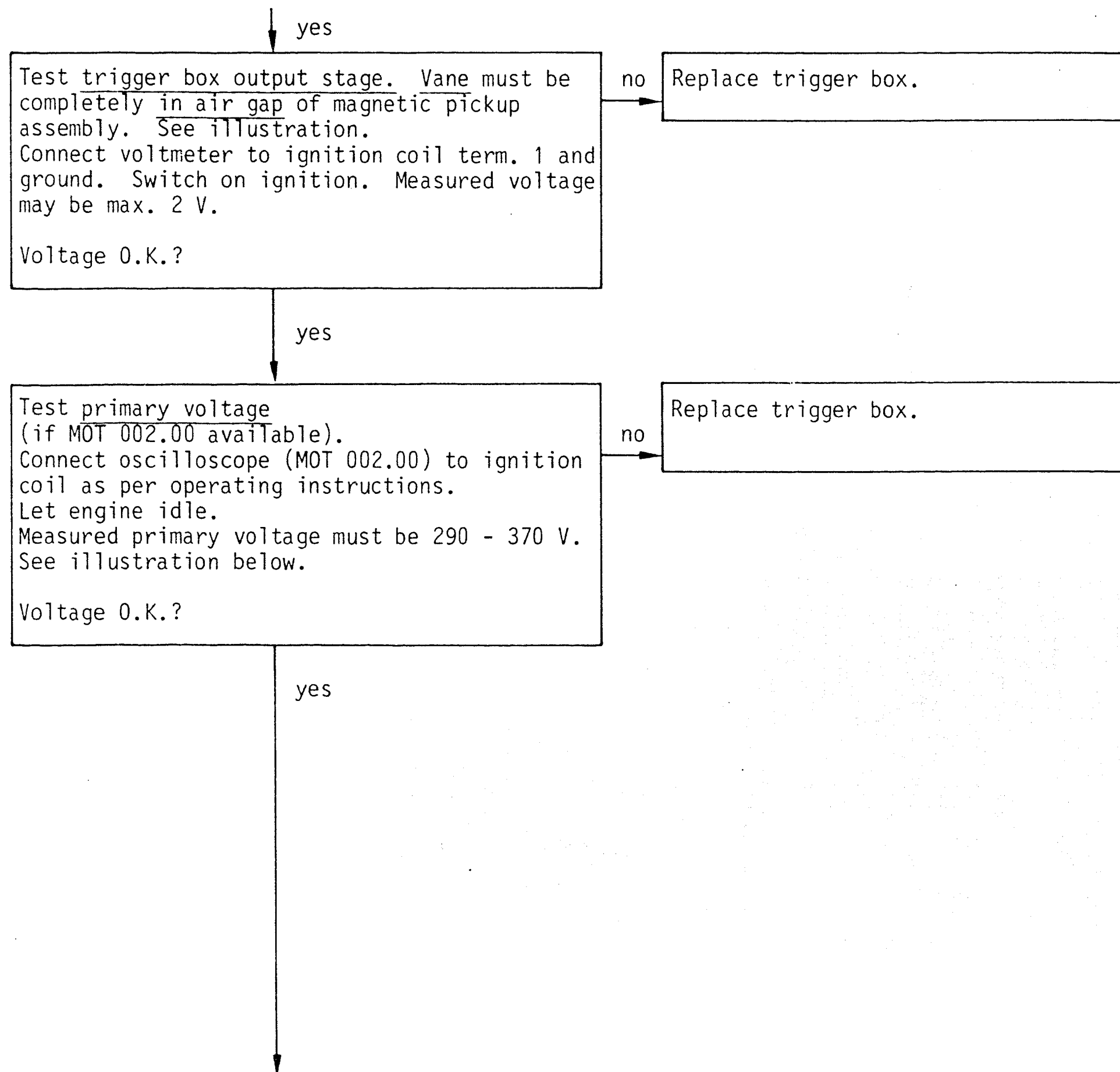
Trouble-shooting program
 TCI-H, conversion kit





- ⚡ Dangerous voltages approx. 400 V - 25 kV
- 1 = Trigger box
 - 2 = Ballast resistor
 - 3 = Ignition coil
 - 4 = Ignition distributor
 - 5 = Battery
 - 6 = Ignition and starting switch
 - 7 = Starting motor
 - 8 = Relay - is only connected if starting motor does not have term. 15a
 - 9 = To tachometer





Continued on B 13

B 11

Trouble-shooting program
TCI-H, conversion kit



B 12

Trouble-shooting program
TCI-H, conversion kit



Yes



Ignition system OK?

Test completed.

Tests starting at C 1, are now no longer necessary.

Note:

If customer complaint is not yet remedied, then check for further fault possibilities in the fuel system. Check if engine mechanically OK.



No primary signal or no ignition spark
(Continued from B 3)

yes

Test trigger box voltage supply.

Pull off trigger-box plug.
Connect voltmeter to trigger-box plug between
term. 15 and term. 31.
Switch on ignition. Voltmeter must indicate
battery voltage.

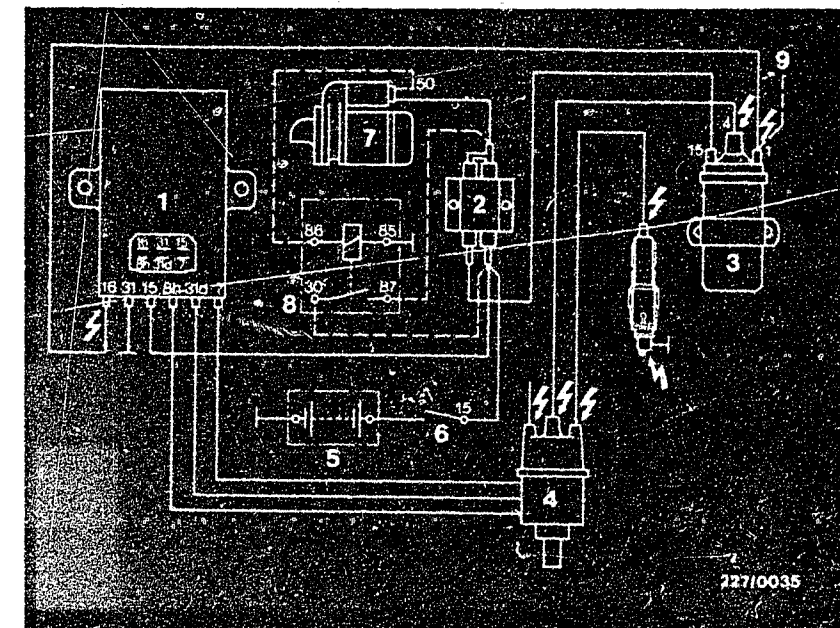
Voltage O.K.?

no

Test for open circuit in cables and
connections from ignition and star-
ting switch to trigger-box plug term.
15 including ground cable term. 31.
Eliminate open circuit.

yes

Continued on C 3/4



⚡ Dangerous voltages
approx. 400 V - 25 kV

- 1 = Trigger box
- 2 = Ballast resistor
- 3 = Ignition coil
- 4 = Ignition distributor
- 5 = Battery
- 6 = Ignition and starting switch
- 7 = Starting motor
- 8 = Relay - is only connected if
starting motor does not have
term. 15a
- 9 = To tachometer

C1

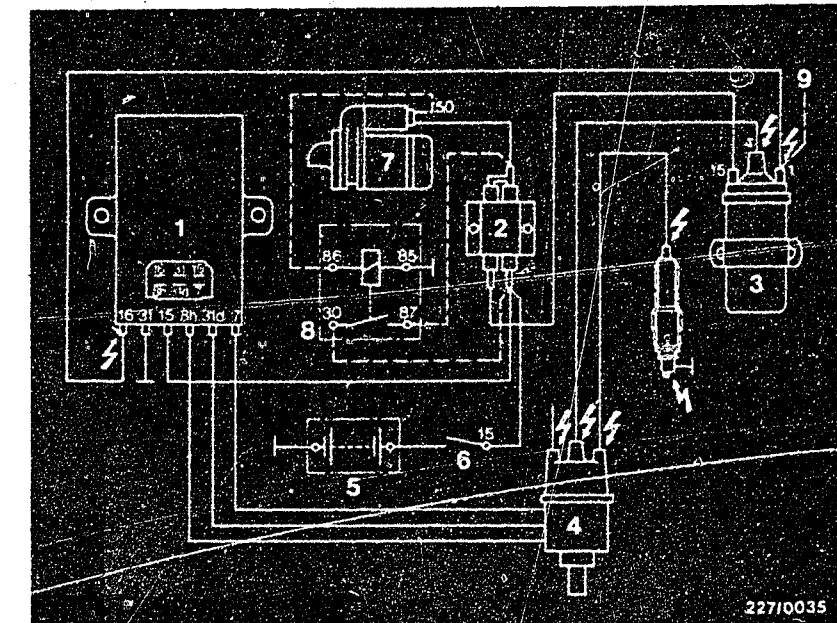
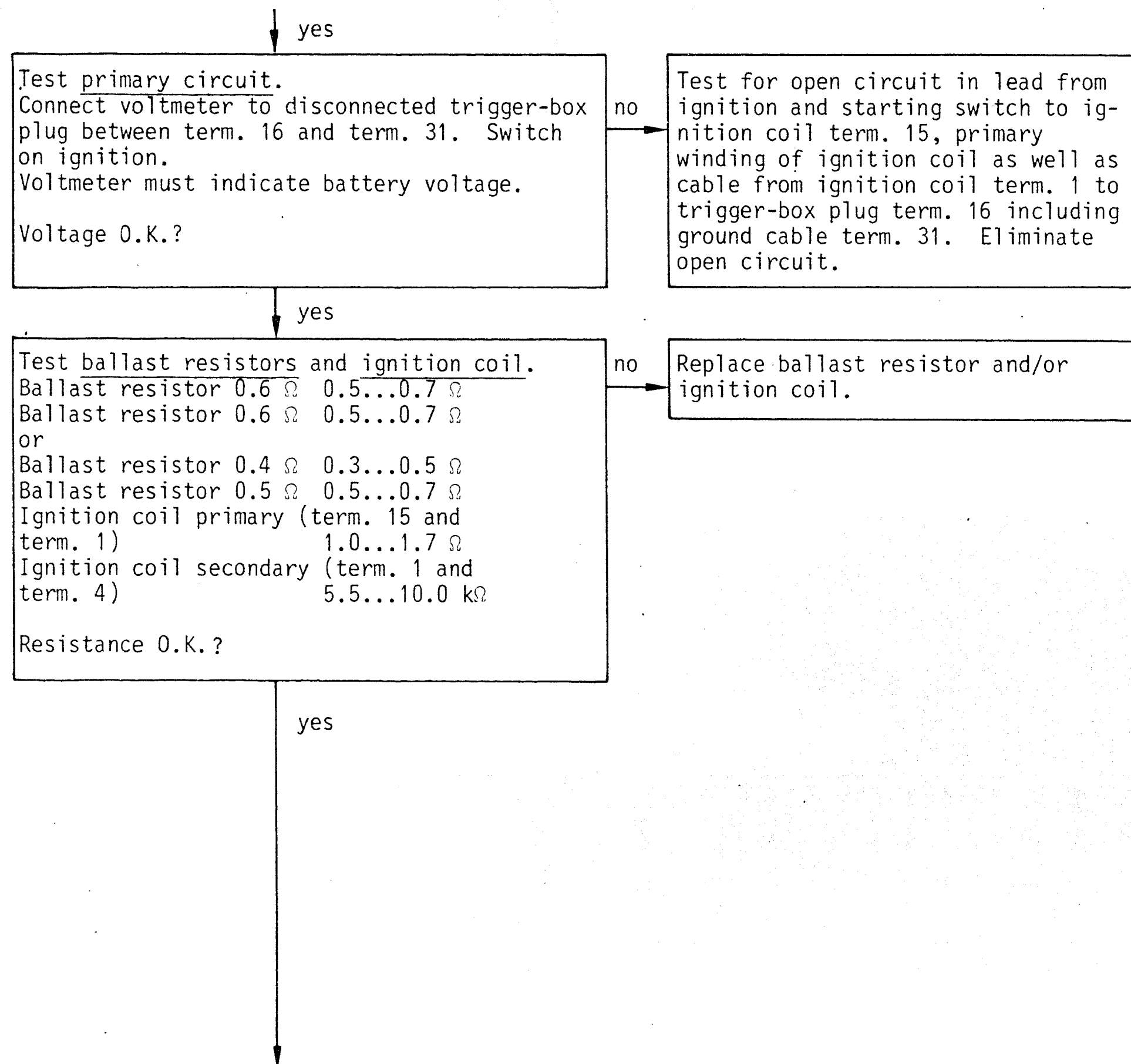
Trouble-shooting program
TCI-H, conversion kit



C2

Trouble-shooting program
TCI-H, conversion kit





⚡ Dangerous voltages
approx. 400 V - 25 kV

- 1 = Trigger box
- 2 = Ballast resistor
- 3 = Ignition coil
- 4 = Ignition distributor
- 5 = Battery
- 6 = Ignition and starting switch
- 7 = Starting motor
- 8 = Relay - is only connected if starting motor does not have term. 15a
- 9 = To tachometer

Continued on C 5/6

C3

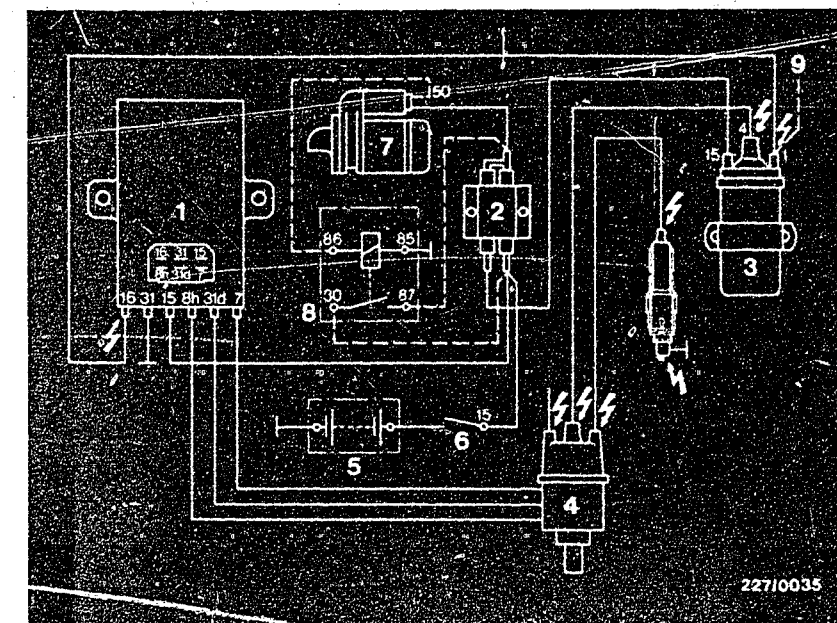
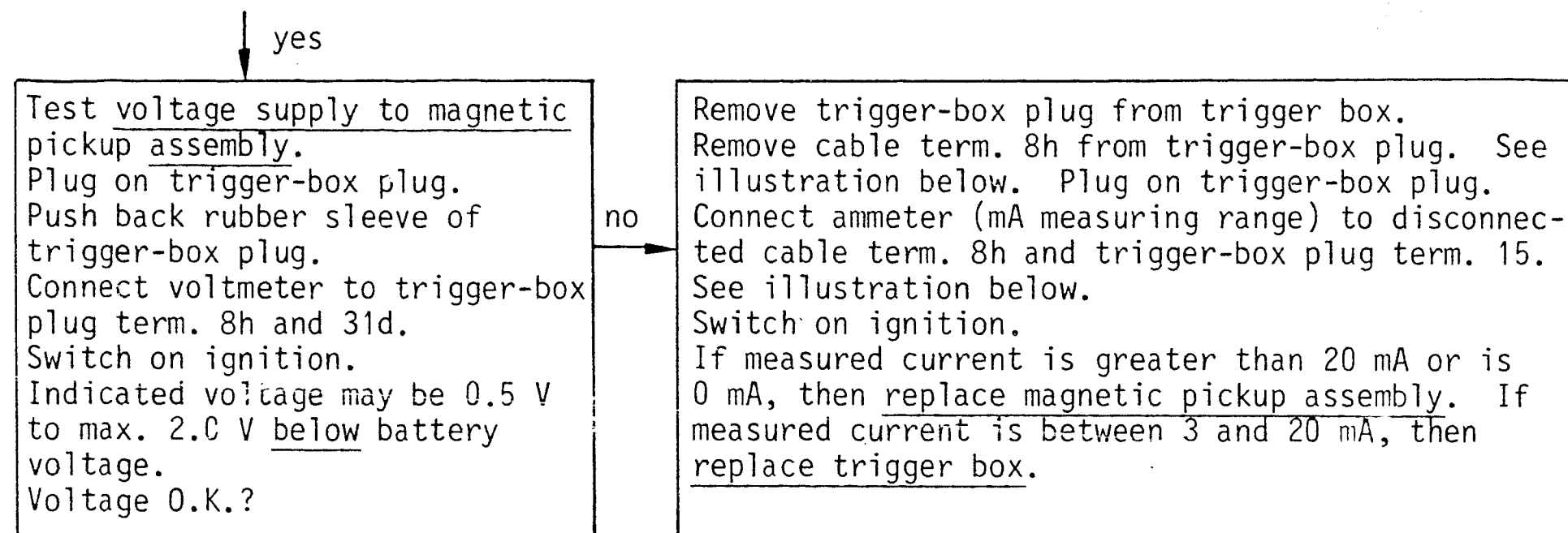
Trouble-shooting program
TCI-H, conversion kit



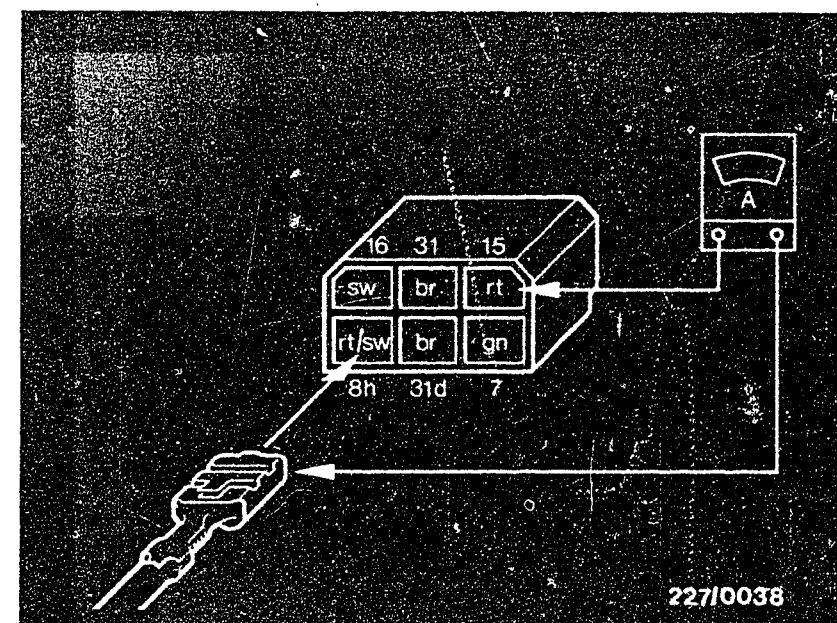
C4

Trouble-shooting program
TCI-H, conversion kit





- ⚡ Dangerous voltages approx. 400 V - 25 kV
- 1 = Trigger box
 - 2 = Ballast resistor
 - 3 = Ignition coil
 - 4 = Ignition distributor
 - 5 = Battery
 - 6 = Ignition and starting switch
 - 7 = Starting motor
 - 8 = Relay
 - 9 = To tachometer



Continued on C 7/8

C5

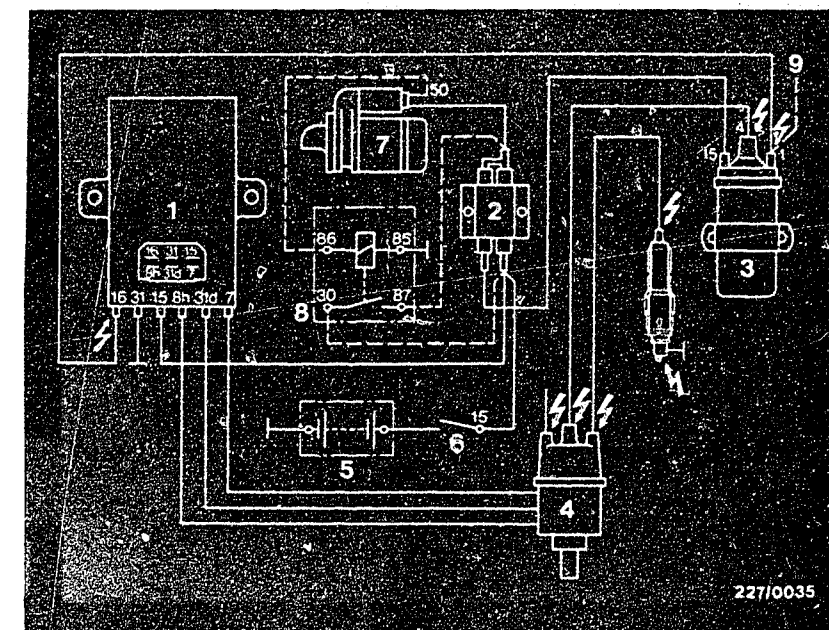
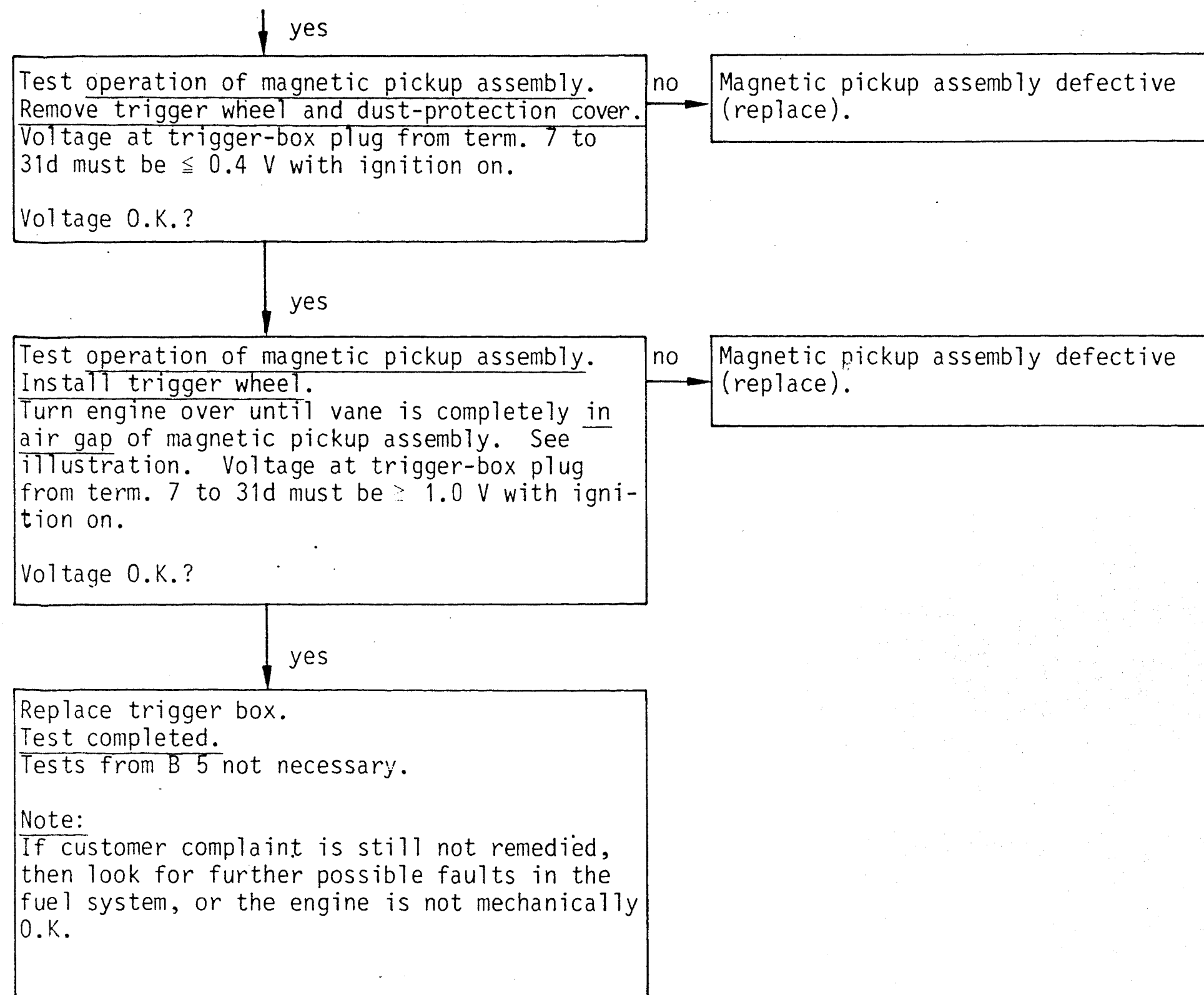
Trouble-shooting program
 TCI-H, conversion kit



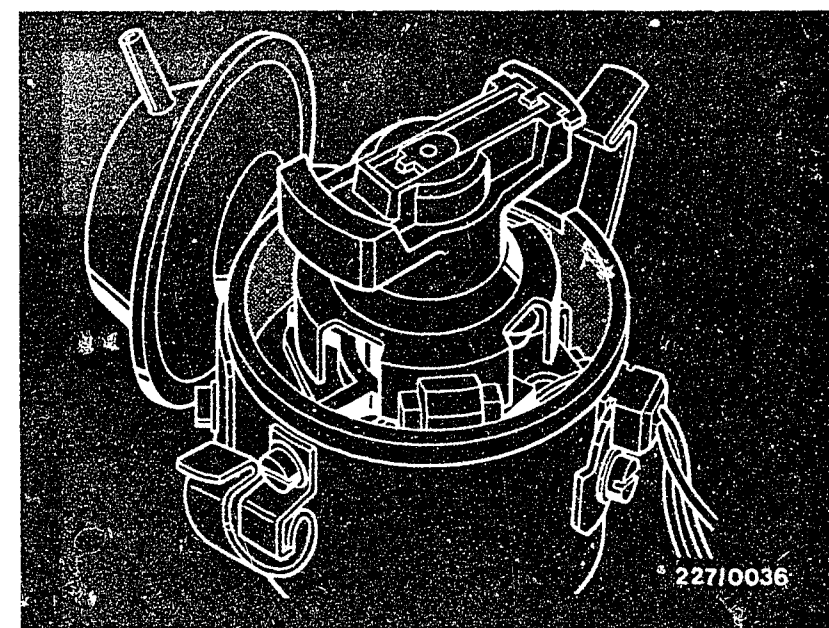
C6

Trouble-shooting program
 TCI-H, conversion kit





- ⚡ Dangerous voltages approx. 400 V - 25 kV**
- 1 = Trigger box
 - 2 = Ballast resistor
 - 3 = Ignition coil
 - 4 = Ignition distributor
 - 5 = Battery
 - 6 = Ignition and starting switch
 - 7 = Starting motor
 - 8 = Relay
 - 9 = To tachometer



C7

Trouble-shooting program
TCI-H, conversion kit



C8

Trouble-shooting program
TCI-H, conversion kit



After-sales Service

Technical Bulletin

Only for use within the Bosch organization. Not to be communicated to any third party.

22

Danger of Accident on Semi-conductor Ignition Systems

VDT-I-227/102 B

11.1976

Please be sure to pass this bulletin on to your employees for their attention.

The increased demands made on their ignition systems by modern engines, and the wish for freedom from maintenance, led some time ago to manufactures starting to equip their vehicles with semi-conductor ignition systems as original equipment. In most cases the performance of nearly all makes of such systems is higher than that of conventional systems, and further improvements are to be expected. This means that semi-conductor ignition systems have reached the point where contact with "live" parts or contacts (whether on the primary side or the secondary side) can prove fatal.

In this connection we should like to point out to you that the laws valid in your country regarding work on high-voltage systems must be adhered to when working on, or testing, semi-conductor ignition systems.

As a matter of principle, when working on such ignition systems the ignition is to be switched off. Included in such work are the following operations:

- Connection of engine testing equipment (timing light, dwell-tach tester, ignition oscilloscope etc.).
- Replacement of ignition system parts (spark plugs, ignition coil, ignition distributor, H.T. ignition cables etc.).

If it is necessary to switch on the ignition in order to test the system or make adjustments on the engine (to the carburetor for instance), then lethal voltages are present throughout the entire system.

This means that the danger of accident exists not only at individual components in the system (e.g. ignition distributor, ignition coil, trigger box, ignition harness), but also at the wiring harness (e.g. connection for the tachometer, diagnostic connector), on terminals, and on test equipment.

BOSCH

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L1

Technical Bulletin

IC1-H, conversion kit

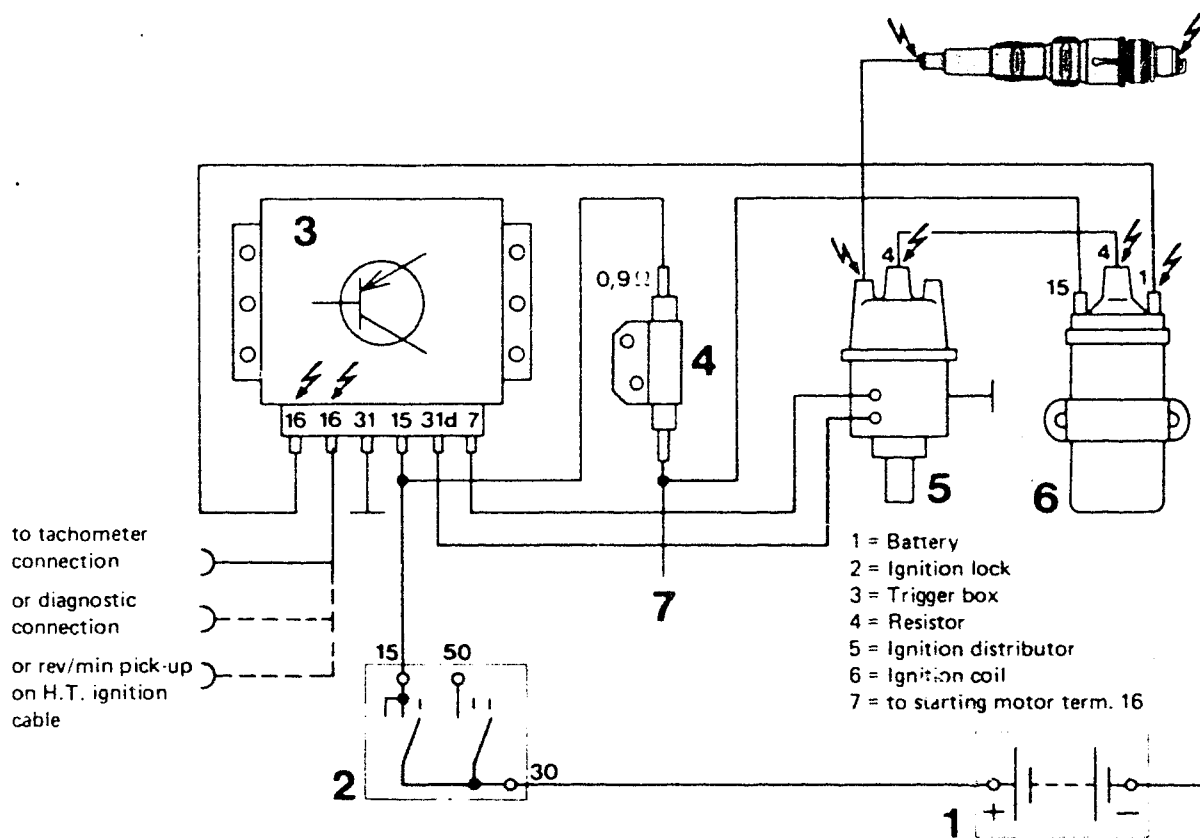


In addition, in the case of the capacitor-discharge ignition system (CDI), danger of accident is also present under the following circumstances:

- Operation of the trigger box without the ignition transformer.
- At the trigger box, (removed), relatively soon after it has been switched off (capacitor discharge).

Below is a typical terminal diagram of a semi-conductor ignition system, the danger points are marked with red high-voltage arrows. We would point out that all semi-conductor ignition systems, even the older ones, are to be regarded as dangerous in the sense as defined by this bulletin.

Please address any queries or comments concerning the contents of this publication to our representative in your country.



Terminal diagram



Slip (snap in place) the new distributor rotor (9) with trigger wheel (10) onto the ignition-distributor shaft. Place the new dust-protection cover (11) over the distributor housing (12) and snap into place.

Fit the distributor cap and secure with the spring clips (13).

Slip the insulating tubing over the ignition vane switch leads.

Caution! The ignition vane switch will be destroyed if the polarity is wrong.

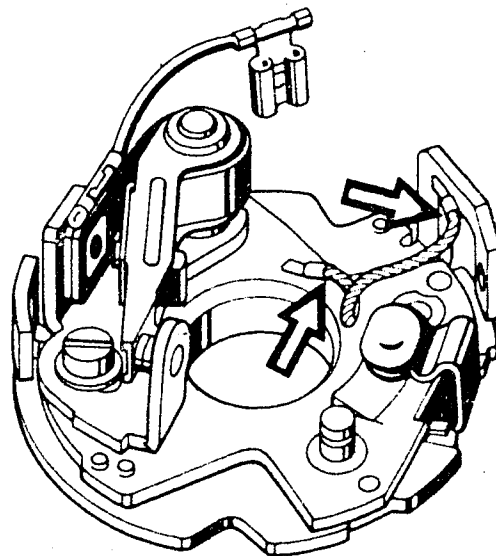


Fig. 2



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RETROFITTING OF TCI-h

in vehicles with short-type ignition distributor

0 231 186 ..

VDT-I-231/103 En

8.1980

The short-type ignition distributor 0 231 186 .. (with contact breaker) cannot be converted to a breakerless type by fitting a Hall pulse generator.

Reason

For design reasons, the distributor shaft in this type of ignition distributor is also supported by a bushing above the breaker-plate assembly. Due to the upper bushing plate, it is impossible to push a distributor rotor together with trigger wheel onto the distributor shaft (in this connection see VDT-I-230/101).

Those vehicles which are equipped with a short-type ignition distributor though, can be retrofitted with breaker-triggered transistorized ignition system TCI-c, 0 227 051 906.

At present, the following vehicles are equipped with the short-type distributor:

VAG (VW/Audi)

Audi 50 with 1.1/1.3 l engine

Audi 80 (4000) with 1.3 l engine

Polo, Derby with 0.8 ... 1.3 l engine

Golf (Rabbit), Scirocco with 1.1 l engine

Passat (Dasher), Jetta with 1.3 l engine

Opel

Opel Kadett D with 1.3 l engine.

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NEW DESIGNATIONS FOR IGNITION SYSTEMS

VDT-1-227/108 En

5.1981

The introduction of new ignition systems has made it necessary to reclassify all designations. The designations listed below will be used immediately in KH workshops and in sales literature.

| Designation | Abbreviated code | Meaning | Switching part | Ignition control and spark advance | High-voltage distribution |
|---|-------------------|----------------------------------|--------------------------------|--------------------------------------|--------------------------------------|
| Coil ignition | SZ (CI) | ----- | mechanical (breaker points) | mechanical (ignition distributor) | mechanical (ignition distributor) |
| Transistorized coil ignition | TSZ-k (TCI-c) | k=breaker-triggered | electronic (trigger box) | mechanical (ignition distributor) | mechanical (ignition distributor) |
| Trigger box with traditional switching techniques | TSZ-I* (TCI-i) | I=induction type pulse generator | electronic (trigger box) | mechanical (ignition distributor) | mechanical (ignition distributor) |
| | TSZ-H (TCI-h) | H=Hall generator | electronic (trigger box) | mechanical ignition distributor | mechanical (ignition distributor) |
| Transistorized ignition | TZ-I* (TI-i) | I=induction type pulse generator | electronic (trigger box) | mechanical (ignition distributor) | mechanical (ignition distributor) |
| (Trigger box in hybrid technique) | TZ-H* (TI-h) | H=Hall generator | electronic (trigger box) | mechanical (ignition distributor) | mechanical (ignition distributor) |

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| Designation | Abbreviated code | Meaning | Switching part | Ignition control and spark advance | High-voltage distribution |
|---|------------------|------------------------|--|------------------------------------|---|
| Electronic ignition | EZ-L | L=characteristic curve | electronic (trigger box or control unit) | electronic (control unit) | mechanical (ignition distributor) |
| | EZ-F | F=ignition map | electronic (trigger box or control unit) | electronic (control unit) | mechanical (high-voltage distributor) |
| Distributor-less semiconductor ignition | VZ-L | L=characteristic curve | electronic (control unit) | electronic (control unit) | electronic (two-spark ignition coil, or 1 ignition coil/spark plug) |
| | VZ-F | F=ignition map | electronic (control unit) | electronic (control unit) | electronic (two-spark ignition coil, or 1 ignition coil/spark plug) |

* Please note: The ignition system can additionally be fitted with a DLS unit (digital idle stabilizer) or with an ELS unit (electronic idle stabilizer) or with an ESV unit (electronic ignition retardation).



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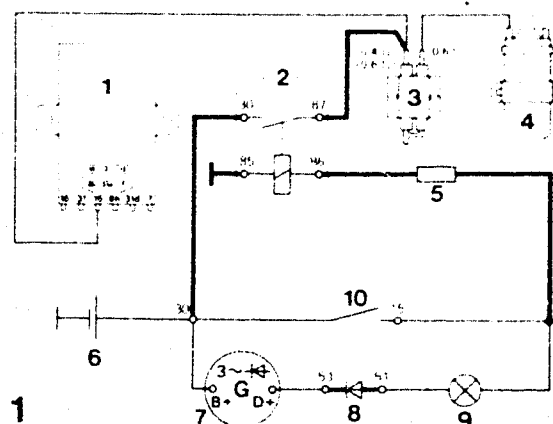
RUNNING-ON WITH RETROFITTED TCI-h

VDT-I-Gen. 025 En

12.1979

Vehicles with resistance cable

In vehicles with resistance cable between the ignition and start switch and the ignition coil terminal 15 (Fig. 1), the TCI-h can be connected by a make-contact relay which is controlled through the resistance cable, without a new cable being necessary. With this wiring arrangement, running-on can occur.

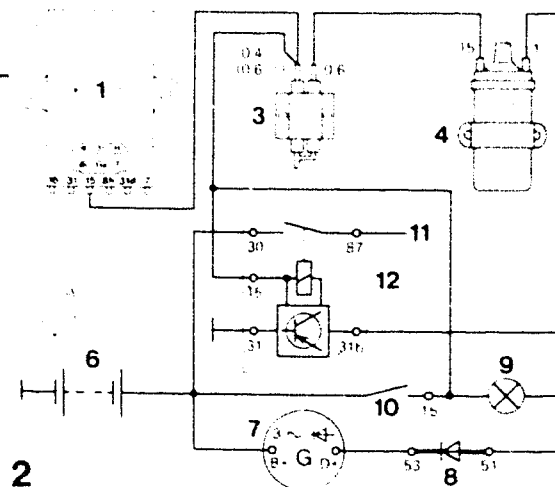


- 1 TCI-h trigger box
- 2 Make-contact relay
- 3 Ballast resistor
- 4 Ignition coil
- 5 Resistance cable
- 6 Battery
- 7 Generator/alternator
- 8 Diode 0 212 911 001
- 9 Generator/alternator control
- 10 Ignition and start switch
- 11 To fuel-pump circuit
- 12 Electronic relay (non-Bosch product)

Vehicles with K-Jetronic

In vehicles with K-Jetronic an electronic relay (Fig. 2) is sometimes fitted by the manufacturer. If the ignition system is retrofitted with TCI-h, it is possible that this electronic relay does not release when the ignition has been switched off with the result that running-on occurs.

This difficulty does not arise in K-Jetronic systems with electro-mechanical relay



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Cause

When the ignition has been switched off by the ignition and start switch, a return voltage caused by the generator/alternator continuing to run-on occurs in cable 15 through the generator/alternator control.

The electromechanical relay, if wired via the resistance cable, cannot release when there is a sufficiently high return voltage present.

With the electronic relay in K-Jetronic systems, only a slight return voltage is necessary to prevent the relay from releasing.

Remedy

By fitting the diode 0 212 911 001 between generator/alternator terminal D+, or voltage regulator terminal D+/61, and the generator/alternator control, the return voltage from the generator/alternator is blocked and the relay can release.

If terminal D+ or D+/61 is connected for the control of auxiliary relays (for instance, for backlight defogger or similar devices), care must be taken that the control cables are connected between terminal D+ or D+/61 and the diode connection terminal 53, and NOT between diode connection terminal 51 and generator/alternator control.



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TESTS ON ELECTRONIC IGNITION SYSTEMS
(TCI, TZ)
TESTER INSTRUCTIONS

VDI-1-Gen. 035 En
3.1981

The following tests are listed in older and current Tester operating instructions or in Trouble-shooting with the oscillograph.:

- "Separate ignition coil test" (concerns EFAW 213, 214, 268, AE 2000).
- Calculating the "ignition voltage reserve" (concerns EFAW 213, 214, 268, AE 2000 and MOT series).
- "Intensified insulation test" (concerns EFAW 213, 214, 268, AE 2000 and MOT series).

Nowadays transistorized ignition systems deliver more than 30,000 V secondary voltage.

To avoid damage to ignition coil, ignition cable and ignition distributor by voltage flashovers, the tests listed above should not be carried out on transistorized ignition systems.

The contents of this Service Information has already been published in the K7-Information K7-VJF 17/8012.

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